We claim:

1. A method of operating an equalizer comprising:

continuously storing input data segments of received symbols in a decision feedback equalizer buffer at a symbol rate S;

supplying output data sections of received symbols from the decision feedback equalizer buffer at an output rate of nS such that void times separate the output data sections, wherein n > 1;

equalizing the received symbols supplied by the decision feedback equalizer buffer in a decision feedback equalizer to provide equalized symbols;

decoding the equalized symbols by a decoder to provide decoded symbols;

calculating adjustments for the decision feedback equalizer during the void times such that the adjustments are calculated based on both the received symbols supplied by the decision feedback equalizer buffer and the decoded symbols; and,

applying the adjustments to the decision feedback equalizer.

2. The method of claim 1 wherein n = 3.

3. The method of claim 1 wherein each output data section comprises first, second, and third portions, wherein the first portion comprises received symbols repeated from a prior output data section, and wherein the second and third portions comprise the received symbols in a received data segment following the repeated received symbols.

4. The method of claim 3 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of the next output data section following a corresponding void time.

5. The method of claim 3 wherein the method further comprises discarding the repeated received symbols at an output of the decision feedback equalizer.

6. The method of claim 5 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of

the next output data section following a corresponding void time.

7. The method of claim 6 wherein n = 3.

8. The method of claim 3 further comprising:

storing states of the decoder and the decision feedback equalizer at the beginning of the third portion of each supplied section; and,

restoring the states to the decoder and the decision feedback equalizer at the beginning of the next section supplied by the decision feedback equalizer buffer.

9. The method of claim 8 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of the next output data section following a corresponding void time.

10. The method of claim 8 wherein the method further comprises discarding the repeated received symbols at an output of the decision feedback equalizer.

11. The method of claim 10 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of the next output data section following a corresponding void time.

12. The method of claim 11 wherein n = 3.

13. The method of claim 1 wherein the decision feedback equalizer comprises taps having tap weights, wherein the calculating of adjustments for the decision feedback equalizer comprises (i) estimating a channel impulse response based on the received symbols supplied by the decision feedback equalizer buffer and based on the decoded symbols, and (ii) calculating the tap weights for the decision feedback equalizer based on the estimated channel, and wherein the applying of the adjustments to the decision feedback equalizer comprises applying the calculated tap weights to the decision feedback equalizer.

14. A method of operating an equalizer comprising:

continuously storing input data segments of received symbols in a decision feedback equalizer buffer at a symbol rate S;

supplying output data sections of received symbols from the decision feedback equalizer buffer at an output rate of nS such that void times separate the output data sections, wherein n > 1;

equalizing the received symbols supplied by the decision feedback equalizer buffer in a decision feedback equalizer to provide equalized symbols, wherein the decision feedback equalizer comprises taps having tap weights;

decoding the equalized symbols by a decoder to provide decoded symbols;

estimating a channel impulse response based on both the received symbols supplied by the decision feedback equalizer buffer and the decoded symbols;

calculating the tap weights for the decision feedback equalizer based on the estimated channel, wherein the estimating of the channel impulse response and the calculating of the tap weights are performed during the void times; and,

applying the calculated tap weights to the decision feedback equalizer.

15. The method of claim 14 wherein $n \geq 2$.

16. The method of claim 14 wherein $n = 3$.

17. The method of claim 14 wherein each output data section comprises first, second, and third portions, wherein the first portion comprises received symbols repeated from a prior output data section, and wherein the second and third portions comprise the received symbols in a received data segment following the repeated received symbols.

18. The method of claim 17 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of the next output data section following a corresponding void time.

19. The method of claim 17 wherein the method further comprises discarding the repeated received symbols at an output of the decision feedback equalizer.

20. The method of claim 19 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of the next output data section following a corresponding void time.

21. The method of claim 20 wherein n = 3.

22. The method of claim 17 further comprising:

storing states of the decoder and the decision feedback equalizer at the beginning of the third portion of each supplied section; and,

restoring the states to the decoder and the decision feedback equalizer at the beginning of the next section supplied by the decision feedback equalizer buffer.

23. The method of claim 22 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of the next output data section following a corresponding void time.

24. The method of claim 22 wherein the method further comprises discarding the repeated received symbols at an output of the decision feedback equalizer.

25. The method of claim 24 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of the next output data section following a corresponding void time.

26. The method of claim 25 wherein n = 3.

27. A method of operating an equalizer comprising:

supplying segments of received symbols to the equalizer to produce equalized segments, wherein each of the segments of received symbols occupies a corresponding segment time period;

decoding the equalized segments by a decoder to produce decoded segments;

calculating adjustments for the equalizer based on n decoded segments and n segments of received symbols, wherein $n \geq 1$, and wherein the calculating of adjustments

is performed in a pipelined manner at least twice per segment time period; and,

applying the adjustments to the equalizer.

28. The method of claim 27 wherein n = 3.

29. The method of claim 28 wherein the calculating of adjustments comprises:

calculating a first set of adjustments based on data in segments time periods one, two, and three; and,

calculating a second set of adjustments based on (i) data in only a latter portion of segment time period one, (ii) data in all of segment time period two, (iii) data in all of segment time period three, and, (iv) data in only a beginning portion of segment time period four.